REMARKS

Applicant requests reconsideration of the present application in view of the foregoing amendments and the discussion that follows. The status of the claims is as follows. Claims 1-61 were originally filed. Claims 1-4, 11-13, 21, 57-59, 62 and 63 are pending. Claims 5-10, 14-20, 22-56, and 60-61 were previously canceled and Claims 4 and 57-59 were canceled herein. Applicant reserves the right to file divisional applications to the separately patentable subject matter of the aforementioned claims as well as to non-elected species. Claims 1 and 12 were amended herein.

The Amendment

Claims 57-59 were canceled as a result of having been withdrawn from consideration as a result of a restriction requirement and as requested in the Office Action.

Claim 1 was amended to incorporate the subject matter of claim 4 therein.

Claim 12 was amended in a manner similar to that for claim 1.

Previous Rejections

Applicant acknowledges the indication in the Office Action that the art rejection over De Lumley-Woodyear was withdrawn.

Rejection under 35 U.S.C. §102

Claims 1-4, 11, 12, 21, 62 and 63 were rejected under paragraph (e) of the above code section as being anticipated by Choong, *et al.* (U.S. Patent No. 6,518,024) (Choong).

In claim 1 of the present application, each of the electrodes comprises at least one target probe that binds to a target molecule to form a bimolecular complex. The target probe has covalently coupled thereto a redox active moiety selected from the group consisting of transition metal complexes and non-enzymatic organic electron donors and acceptors, or the target probe has attached thereto one member of a non-enzymatic ligand-bioconjugate pair that binds to the other member of the non-enzymatic ligand-bioconjugate pair comprising a redox active moiety selected from the group consisting of transition metal complexes and non-enzymatic organic electron donors and acceptors.

At the very least, Choong does not disclose or suggest the above. The probe attached to an electrode in Choong does not have a redox active moiety coupled to it nor does it have one member of a non-enzymatic ligand-conjugate pair coupled to it. In the method of claim 1, the electrodes with attached probes bearing either a redox active moiety or a member of a non-enzymatic ligand-conjugate pair is exposed to a sample to be analyzed. Target molecules, if present, hybridize to the target probes. A plurality of cells within the semiconductor substrate is selectively addressed by applying a stimulus to each of the electrodes to activate a predetermined redox active moiety that is associated with an electrode. The target molecule, if present, modulates the electronic properties of the redox active moiety attached to the probe either directly or as a result of the presence of a non-enzymatic ligand-conjugate pair member. This modulation is detected and related to the presence of the target molecule.

In Choong, the oligonucleotide probe on the electrode does not have a redox active moiety or a member of a non-enzymatic ligand-conjugate covalently coupled to it. Furthermore, a sample is not exposed to such an oligonucleotide probe to observe modulation of a response as a result of the presence of a target molecule by virtue of hybridization from a sample. As indicated by the patentee, detection of single base extension using the methods and apparatus of the invention is achieved by sequence-specific incorporation of chain-terminating nucleotide species chemically labeled with an electrochemical species. There is nothing relevant to the methods of claim 1 in the teaching of Choong.

Furthermore, claim 1 recites that the stimulus is applied using an analog bus, which cooperates with circuitry on or off the semiconductor substrate to apply the stimulus to the electrode, and wherein the corresponding response is detected using an analog bus, which cooperates with circuitry on or off the semiconductor substrate to detect the corresponding response from the electrodes. Choong makes no disclosure or suggestion regarding this element of the presently claimed method.

For reasons similar to those discussed above, Choong does not anticipate the methods of claim 12. In the present situation, therefore, Choong does not disclose each and every element of the presently claimed invention of claims 1 and 12 and those claims dependent therefrom. Accordingly, the above rejection cannot be maintained.

Rejections under 35 U.S.C. §103

Claims 1-4, 11, 12, 21, 62 and 63 were rejected under paragraph (a) of the above code section as being unpatentable over Blackburn, *et al.* (U.S. Patent No. 6,686,150) (Blackburn). This rejection was maintained from the previous Office Action.

Claim 4 was canceled and the subject matter thereof was incorporated into claim 1. Claims 1 and 12, and those claims depending therefrom, are not disclosed or suggested by Blackburn. Claim 1 recites that the stimulus is applied using an analog bus, which cooperates with circuitry on or off the semiconductor substrate to apply the stimulus to the electrode, and wherein the corresponding response is detected using an analog bus, which cooperates with circuitry on or off the semiconductor substrate to detect the corresponding response from the electrodes. Blackburn makes no disclosure or suggestion regarding this element of the presently claimed method.

Blackburn does not disclose or suggest the subject matter of Claim 12 and those claims depending therefrom for reasons similar to those discussed above with respect to claim 1.

The Office Action contends that Blackburn discloses a method that comprises interacting "at least a first primer nucleic acid" to the "target sequence" to form [singular] hybridization complex. It is Applicant's position that the first primer nucleic acid of Blackburn is a primer that is employed in subsequent amplification as discussed at length in the reference. Claims 1 and 12 recite that the target probe of the electrode has covalently coupled thereto a redox active moiety selected from the group consisting of transition metal complexes and non-enzymatic organic electron donors and acceptors, or the target probe has attached thereto one member of a non-enzymatic ligand-bioconjugate pair that binds to the other member of the non-enzymatic ligand-bioconjugate pair comprising a redox active moiety selected from the group consisting of transition metal complexes and non-enzymatic organic electron donors and acceptors.

Conclusion

Claims 1-3, 11-13, 21 and 62-63 satisfy the requirements of 35 U.S.C. §§102 and 103. Allowance of the above-identified patent application, it is submitted, is in order. In any event, the above amendments should be entered since claim 4 was already under consideration and examination and, therefore, no new issues are

presented. Thus, the amendment narrows the number of issues and places the application in better form for consideration on appeal.

Respectfully submitted,

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